I hereby certify that this correspond is being deposited with the U.S. Postal Service with sufficient postage. First Class Mail, in an envelope addressed to: U.S. Patent and Trademark Office, Box Sequence Listing, P.O. Box 2327, Arlington, VA, 22202, on the date shown below.

ated: November 12, 2002

Signature: (Megan E. Williams)

Docket No.: GNN-014CP (PATENT)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of: Jeffrey Bluestone, et al.

Application No.: 09/835297

Group Art Unit: 1645

Filed: April 12, 2001

Examiner: Not Yet Assigned

For: SURFACE-BOUND ANTIGEN BINDING

PORTIONS OF ANTIBODIES THAT BIND TO CTLA-4 AND CD28AND USES THEREFOR

STATEMENT PURSUANT TO 37 CFR 1.821(F)

U.S. Patent and Trademark Office Box Sequence Listing P.O. Box 2327 Arlington, VA 22202

Dear Sir:

Submitted herewith for filing in connection with the above-referenced patent application is a labeled, computer readable copy of the Sequence Listing included in the application.

The content of the paper copy of the Sequence Listing contained on pages 1 to 7 of the above-referenced patent application, and the content of the computer readable form are the same, as required by 37 CFR 1.821(c) and by 37 CFR 1.821(e).

Application No.:.09/835297

Docket No.: GNN-014CP

Applicant believes no fee is due with this response. However, if a fee is due, please charge our Deposit Account No. 12-0080, under Order No. GNN-014CP from which the undersigned is authorized to draw.

Dated: November 12, 2002

Respectfully submitted,

Megan E. Williams

Registration No.: 43,270

LAHIVE & COCKFIELD, LLP

28 State Street

Boston, Massachusetts 02109

(617) 227-7400

(617) 742-4214 (Fax)

Attorneys for Applicant

NOV 1 9 2002

SEQUENCE LISTING

Attorn

110> Bluestone, Jeffrey Collins, Mary Whitters, Matthew J. Kranz, David Griffin, Matthew D.

<120> SURFACE-BOUND ANTIGEN BINDING PORTIONS OF ANTIBODIES THAT BIND TO CTLA4 AND CD28 AND USES THEREFOR

```
<130> GNN-014CP
```

<140> US 09/835297

<141> 2001-04-12

<150> US 60/196851

<151> 2000-04-12

<160> 17

<170> PatentIn Ver. 2.0

<210> 1

<211> 672

<212> DNA

<213> Homo sapiens

<400> 1

atggettgee ttggatttea geggeacaag geteagetga acetggetge caggacetgg 60 ceetgeacte teetgtttt tettetette atecetgtet tetgeaaage aatgeaegtg 120 geecageetg etgtggtaet ggeeageage egaggeateg eeagetttgt gtgtgagtat 180 geateteeag geaaageeae tgaggteegg gtgacagtge tteggeagge tgacageeag 240 gtgacetgaag tetgtgegge aacetacatg acggggaatg agttgacett eetagatgat 300 teeatetgea egggeacete eagtggaaat eaagtgaace teaetateea aggactgagg 360 geeatggaca egggaeteta eatetgeaag gtggagetea tgtaceeaee geeatactae 420 etgggeatag geaacggaae eeagatttat gtaattgate eagaacegtg eecagattet 480 gaetteetee tetggateet tgeageagtt agtteggggt tgtttttta tagetttete 540 eteaeagetg tteetttgag eaaaatgeta aggaeaagaa geeetettae aacaggggte 600 tatgtgaaaa tgeeeceaae agageeagaa tgtgaaaage aattteagee ttattttat 660 eecaateatt ga

<210> 2

<211> 223

<212> PRT

<213> Homo sapiens

<400> 2

Met Ala Cys Leu Gly Phe Gln Arg His Lys Ala Gln Leu Asn Leu Ala 1 5 10 15

Thr Arg Thr Trp Pro Cys Thr Leu Leu Phe Phe Leu Leu Phe Ile Pro 20 25 30

Val Phe Cys Lys Ala Met His Val Ala Gln Pro Ala Val Leu Ala 35 40 45

Ser Ser Arg Gly Ile Ala Ser Phe Val Cys Glu Tyr Ala Ser Pro Gly 50 60

B3

B3

```
Lys Ala Thr Glu Val Arg Val Thr Val Leu Arg Gln Ala Asp Ser Gln
                     70
Val Thr Glu Val Cys Ala Ala Thr Tyr Met Met Gly Asn Glu Leu Thr
Phe Leu Asp Asp Ser Ile Cys Thr Gly Thr Ser Ser Gly Asn Gln Val
                                105
Asn Leu Thr Ile Gln Gly Leu Arg Ala Met Asp Thr Gly Leu Tyr Ile
        115
                            120
Cys Lys Val Glu Leu Met Tyr Pro Pro Pro Tyr Tyr Leu Gly Ile Gly
                        135
Asn Gly Ala Gln Ile Tyr Val Ile Asp Pro Glu Pro Cys Pro Asp Ser
                    150
                                        155
Asp Phe Leu Leu Trp Ile Leu Ala Ala Val Ser Ser Gly Leu Phe Phe
                                    170
Tyr Ser Phe Leu Leu Thr Ala Val Ser Leu Ser Lys Met Leu Lys Lys
Arg Ser Pro Leu Thr Thr Gly Val Tyr Val Lys Met Pro Pro Thr Glu
Pro Glu Cys Glu Lys Gln Phe Gln Pro Tyr Phe Ile Pro Ile Asn
<210> 3
<211> 3806
<212> DNA
<213> Homo sapiens
<400> 3
taaagtcatc aaaacaacgt tatatcctgt gtgaaatgct gcagtcagga tgccttgtgg 60
tttgagtgcc ttgatcatgt gccctaaggg gatggtggcg gtggtggtgg ccgtggatga 120
cqqaqactct caggccttgg caggtgcgtc tttcagttcc cctcacactt cgggttcctc 180
ggggaggagg ggctggaacc ctagcccatc gtcaggacaa agatgctcag gctgctcttg 240
gctctcaact tattcccttc aattcaagta acaggaaaca agattttggt gaagcagtcg 300
cccatgcttg tagcgtacga caatgcggtc aaccttagct gcaagtattc ctacaatctc 360
ttctcaaggg agttccgggc atcccttcac aaaggactgg atagtgctgt ggaagtctgt 420
gttgtatatg ggaattactc ccagcagctt caggtttact caaaaacggg gttcaactgt 480
gatgggaaat tgggcaatga atcagtgaca ttctacctcc agaatttgta tgttaaccaa 540
acagatattt acttctgcaa aattgaagtt atgtatcctc ctccttacct agacaatgag 600
aagagcaatg gaaccattat ccatgtgaaa gggaaacacc tttgtccaag tcccctattt 660
cccqqacctt ctaaqccctt ttgggtgctg gtggtggttg gtggagtcct ggcttgctat 720
agettgetag taacagtgge etttattatt ttetgggtga ggagtaagag gageaggete 780
ctgcacagtg actacatgaa catgactccc cgccgccccg ggcccacccg caagcattac 840
cagccctatg ccccaccacg cgacttcgca gcctatcgct cctgacacgg acgcctatcc 900
agaagccagc cggctggcag cccccatctg ctcaatatca ctgctctgga taggaaatga 960
cegecatete cageeggeea ecteaggee etgttgggee accaatgeea attttteteg 1020
agtgactaga ccaaatatca agatcatttt gagactctga aatgaagtaa aagagatttc 1080
ctgtgacagg ccaagtctta cagtgccatg gcccacattc caacttacca tgtacttagt 1140
gacttgactg agaagttagg gtagaaaaca aaaagggagt ggattctggg agcctcttcc 1200
ctttctcact cacctgcaca tctcagtcaa gcaaagtgtg gtatccacag acattttagt 1260
tgcagaagaa aggctaggaa atcattcctt ttggttaaat gggtgtttaa tcttttggtt 1320
agtgggttaa acggggtaag ttagagtagg gggagggata ggaagacata tttaaaaacc 1380
```

attaaaacac tgtctcccac tcatgaaatg agccacgtag ttcctattta atgctgtttt 1440

50

ВЗ

```
cctttagttt agaaatacat agacattgtc ttttatgaat tctgatcata tttagtcatt 1500
ttgaccaaat gagggatttg gtcaaatgag ggattccctc aaagcaatat caggtaaacc 1560
aagttgcttt cctcactccc tgtcatgaga cttcagtgtt aatgttcaca atatactttc 1620
gaaagaataa aatagttctc ctacatgaag aaagaatatg tcaggaaata aggtcacttt 1680
atgtcaaaat tatttgagta ctatgggacc tggcgcagtg gctcatgctt gtaatcccag 1740
cactttggga ggccgaggtg ggcagatcac ttgagatcag gaccagcctg gtcaagatgg 1800
tgaaactccg tctgtactaa aaatacaaaa tttagcttgg cctggtggca ggcacctgta 1860
atcccagctg cccaggaggc tgaggcatga gaatcgcttg aacctggcag gcggaggttg 1920
cagtgageeg agatagtgee acagetetee ageetgggeg acagagtgag actecatete 1980
aaacaacaac aacaacaaca acaacaacaa caaaccacaa aattatttga gtactgtgaa 2040
ggattatttg tctaacagtt cattccaatc agaccaggta ggagctttcc tgtttcatat 2100
gtttcagggt tgcacagttg gtctctttaa tgtcggtgtg gagatccaaa gtgggttgtg 2160
gaaagagcgt ccataggaga agtgagaata ctgtgaaaaa gggatgttag cattcattag 2220
agtatgagga tgagtcccaa gaaggttctt tggaaggagg acgaatagaa tggagtaatg 2280
aaattettge catgtgetga ggagatagee ageattaggt gacaatette cagaagtggt 2340
caggcagaag gtgccctggt gagagctcct ttacagggac tttatgtggt ttagggctca 2400
qaqctccaaa actctgggct cagctgctcc tgtaccttgg aggtccattc acatgggaaa 2460
qtattttqqa atqtqtcttt tgaagagagc atcagagttc ttaagggact gggtaaggcc 2520
tgaccctgaa atgaccatgg atatttttct acctacagtt tgagtcaact agaatatgcc 2580
tggggacctt gaagaatggc ccttcagtgg ccctcaccat ttgttcatgc ttcagttaat 2640
tcaqqtqttq aaqqaqctta qqttttaqaq qcacqtaqac ttqqttcaaq tctcqttaqt 2700
agttgaatag cctcaggcaa gtcactgccc acctaagatg atggttcttc aactataaaa 2760
tggagataat ggttacaaat gtctcttcct atagtataat ctccataagg gcatggccca 2820
agtetgtett tgaetetgee tateeetgae atttagtage atgeeegaea tacaatgtta 2880
qctattqqta ttattqccat ataqataaat tatqtataaa aattaaactq ggcaatagcc 2940
taagaagggg ggaatattgt aacacaaatt taaacccact acgcagggat gaggtgctat 3000
aatatqaqqa ccttttaact tccatcattt tcctqtttct tgaaatagtt tatcttgtaa 3060
tgaaatataa ggcacctccc acttttatgt atagaaagag gtcttttaat ttttttttaa 3120
tgtgagaagg aagggaggag taggaatett gagattecag ategaaaata etgtaetttg 3180
gttgattttt aagtgggctt ccattccatg gatttaatca gtcccaagaa gatcaaactc 3240
agcagtactt gggtgctgaa gaactgttgg atttaccctg gcacgtgtgc cacttgccag 3300
cttcttgggc acacagagtt cttcaatcca agttatcaga ttgtatttga aaatgacaga 3360
gctggagagt tttttgaaat ggcagtggca aataaataaa tactttttt taaatggaaa 3420
gacttgatct atggtaataa atgattttgt tttctgactg gaaaaatagg cctactaaaq 3480
atgaatcaca cttgagatgt ttcttactca ctctgcacag aaacaaagaa gaaatgttat 3540
acagggaagt ccgttttcac tattagtatg aaccaagaaa tggttcaaaa acagtggtag 3600
gagcaatgct ttcatagttt cagatatggt agttatgaag aaaacaatgt catttgctgc 3660
tattattgta agagtettat aattaatggt acteetataa tttttgattg tgageteace 3720
tatttgggtt aagcatgcca atttaaagag accaagtgta tgtacattat gttctacata 3780
ttcagtgata aaattactaa actact
                                                                  3806
<210> 4
<211> 220
<212> PRT
<213> Homo sapiens
<400> 4
Met Leu Arg Leu Leu Ala Leu Asn Leu Phe Pro Ser Ile Gln Val
                                     10
Thr Gly Asn Lys Ile Leu Val Lys Gln Ser Pro Met Leu Val Ala Tyr
             20
Asp Asn Ala Val Asn Leu Ser Cys Lys Tyr Ser Tyr Asn Leu Phe Ser
```

40

55

Arg Glu Phe Arg Ala Ser Leu His Lys Gly Leu Asp Ser Ala Val Glu

<221> misc_feature <222> (27)...(27)

-4- Attorit

```
Val Cys Val Val Tyr Gly Asn Tyr Ser Gln Gln Leu Gln Val Tyr Ser
                     70
Lys Thr Gly Phe Asn Cys Asp Gly Lys Leu Gly Asn Glu Ser Val Thr
                                      90
Phe Tyr Leu Gln Asn Leu Tyr Val Asn Gln Thr Asp Ile Tyr Phe Cys
Lys Ile Glu Val Met Tyr Pro Pro Pro Tyr Leu Asp Asn Glu Lys Ser
Asn Gly Thr Ile Ile His Val Lys Gly Lys His Leu Cys Pro Ser Pro
                        135
Leu Phe Pro Gly Pro Ser Lys Pro Phe Trp Val Leu Val Val Gly
                    150
                                        155
145
Gly Val Leu Ala Cys Tyr Ser Leu Leu Val Thr Val Ala Phe Ile Ile
                                    170
Phe Trp Val Arg Ser Lys Arg Ser Arg Leu Leu His Ser Asp Tyr Met
            180
                                185
Asn Met Thr Pro Arg Arg Pro Gly Pro Thr Arg Lys His Tyr Gln Pro
                            200
Tyr Ala Pro Pro Arg Asp Phe Ala Ala Tyr Arg Ser
                        215
<210> 5
<211> 16
<212> PRT
<213> Artificial Sequence
<220>
<223> Linker region of fusion protein
<400> 5
Glu Ser Gly Ser Val Ser Ser Glu Glu Leu Ala Phe Arg Ser Leu Asp
<210> 6
<211> 34
<212> DNA
<213> Artificial Sequence
<223> Primer for polymerase chain reaction
<221> misc feature
<222> (15)...(15)
<223> n = c or g
<221> misc_feature
<222> (21)...(21)
<223> n = c or a
```

```
•
```

```
<223> n = c or g or a
<221> misc feature
<222> (28)...(28)
<223> n = a or t
<221> misc_feature
<222> (30)...(30)
<223> n = g or c
<400> 6
                                                                    34
cgaatgatgc atccnaggtg nagctgnngn agtc
<210> 7
<211> 36
<212> DNA
<213> Artificial Sequence
<220>
<223> Linker region of fusion protein
<221> misc feature
<222> (34)...(34)
<223> n = g or a
<400> 7
                                                                    36
gcaaataagc ttttgttcgg ctgaggagac ggtnac
<210> 8
<211> 29
<212> DNA
<213> Artificial Sequence
<223> Linker region of fusion protein
<400> 8
                                                                    29
cgaatggacg tcatgatgac acagtctcc
<210> 9
<211> 40
<212> DNA
<213> Artificial Sequence
<220>
<223> Linker region of fusion protein
<221> misc feature
<222> (23)...(23)
<223> n = t or g
tatgatccgc ggaggaacgt ttnatttcca gcttggtccc
                                                                    40
<210> 10
<211> 93
<212> DNA
<213> Artificial Sequence
<220>
```

-5-

93

89

31

36

37

<400> 10

<210> 11 <211> 89 <212> DNA

<220>

<400> 11

<400> 14

<210> 15 <211> 35 <212> DNA

<220>

<223> Linker region of fusion protein

tatcaaatgt gacgtcatga tgacacagtc tcc

<223> Linker region of fusion protein

ttgttttggc ggctgaggag acggtgacc

<213> Artificial Sequence

gagtaagett atgaggaeed etgeteagtt tettggaate ttgttgetet ggttteeagg 60

agettettaa getteegeta eeactagaca eaggggeeag tggatagace gatggggetg 60

```
<210> 12
<211> 31
<212> DNA
<213> Artificial Sequence
<220>
<223> Linker region of fusion protein
<400> 12
gagctgctta agcaagaaca cacttgtgct c
<210> 13
<211> 36
<212> DNA
<213> Artificial Sequence
<220>
<223> Linker region of fusion protein
gttcgctcta gactaaagga agacggtctg ttcagc
<210> 14
<211> 37
<212> DNA
<213> Artificial Sequence
<223> Linker region of fusion protein
```

gagetgaage ttatgeegtg cagagetetg attetgg

<223> Linker region of fusion protein

<213> Artificial Sequence

Pocket No.: GNN-014CP -7-Bluestone et al. <400> 15 35 gcccgctcta gatcataaag gccctgggtg tctgg <210> 16 <211> 33 <212> DNA <213> Artificial Sequence <220> <223> Linker region of fusion protein <400> 16 33 gagetgaage ttatggetet geagateece age <210> 17 <211> 36 <212> DNA <213> Artificial Sequence <220> <223> Linker region of fusion protein <400> 17 36 gcccgctcta gatcactgca ggagccctgc tggagg

33 corcid